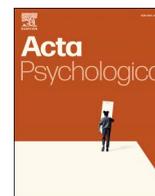




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# Using behavioural science in public health settings during the COVID-19 pandemic: The experience of public health practitioners and behavioural scientists

L.M.T. Byrne-Davis<sup>a,\*</sup>, R.R. Turner<sup>a</sup>, S. Amatya<sup>a</sup>, C. Ashton<sup>a</sup>, E.R. Bull<sup>b</sup>, A.M. Chater<sup>c</sup>, L.J. M. Lewis<sup>d</sup>, G.W. Shorter<sup>e</sup>, E. Whittaker<sup>f</sup>, J.K. Hart<sup>a</sup>

<sup>a</sup> Division of Medical Education, University of Manchester, UK

<sup>b</sup> Manchester Metropolitan University, UK

<sup>c</sup> Centre for Health, Wellbeing and Behaviour Change, Institute for Sport and Physical Activity Research, Faculty for Education, English and Sport, University of Bedfordshire, UK

<sup>d</sup> Public Health Wales, 2 Capital Quarter, Cardiff CF10 4BZ, UK

<sup>e</sup> Drug and Alcohol Research Network, Centre for Improving Health Related Quality of Life, School of Psychology, Queen's University Belfast, Belfast, UK

<sup>f</sup> North Yorkshire County Council, UK

## ABSTRACT

**Introduction:** The emergence of COVID-19 and the importance of behaviour change to limit its spread created an urgent need to apply behavioural science to public health. Knowledge mobilisation, the processes whereby research leads to useful findings that are implemented to affect positive outcomes, is a goal for researchers, policy makers and practitioners alike. This study aimed to explore the experience of using behavioural science in public health during COVID-19, to discover barriers and facilitators and whether the rapidly changing context of COVID-19 influenced knowledge mobilisation.

**Methods:** We conducted a semi-structured interview study, with ten behavioural scientists and seven public health professionals in England, Scotland, Wales, The Netherlands and Canada. We conducted an inductive thematic analysis.

**Results:** We report three key themes and 10 sub-themes: 1. Challenges and facilitators of translation of behavioural science into public health (Methods and frameworks supported translation, Lack of supportive infrastructure, Conviction and sourcing of evidence and Embracing behavioural science) 2. The unique context of translation (Rapid change in context, the multi-disciplinary team and the emotional toll). 3. Recommendations to support future behavioural science translation (Embedding experts into teams, Importance of a collaborative network and showcasing the role of behavioural science).

**Discussion:** Barriers and facilitators included factors related to relationships between people, such as networks and teams; the expertise of individual people; and those related to materials, such as the use of frameworks and an overwhelming amount of evidence and literature.

**Conclusion:** People and frameworks were seen as important in facilitating behavioural science in practice. Future research could explore how different frameworks are used. We recommend a stepped competency framework for behavioural science in public health and more focus on nurturing networks to facilitate knowledge mobilisation in future emergencies.

## 1. Introduction

Public health bodies aim to protect, maintain, and improve health, including promoting health and reducing health inequalities (Cabaj et al., 2019). Almost all public health strategies involve encouraging behaviour change. In high-income countries, much of this has been focused on the reduction of risk for non-communicable diseases, such as smoking cessation, reduction in alcohol use, increasing physical activity

and improving diet (Department of Health and Social Care, 2020). This is in addition to health protection behaviours, such as attending screening appointments, receiving vaccines and immunisations. The COVID-19 pandemic has raised novel challenges in applying behaviour change related to the infection, prevention, and control of the SARS-CoV-2 virus with limited knowledge of its effect and more recently to the uptake of vaccines. All of which has been required at speed and in the context of changing guidance, changing data and changing scientific

\* Corresponding author at: Division of Medical Education, Stopford Building, Oxford Road, Manchester M13 9PT, UK.

E-mail addresses: [lucie.byrne-davis@manchester.ac.uk](mailto:lucie.byrne-davis@manchester.ac.uk) (L.M.T. Byrne-Davis), [Rebecca.turner@manchester.ac.uk](mailto:Rebecca.turner@manchester.ac.uk) (R.R. Turner), [Suyesh.amatya@student.manchester.ac.uk](mailto:Suyesh.amatya@student.manchester.ac.uk) (S. Amatya), [Chloe.ashton-2@student.manchester.ac.uk](mailto:Chloe.ashton-2@student.manchester.ac.uk) (C. Ashton), [e.bull@mmu.ac.uk](mailto:e.bull@mmu.ac.uk) (E.R. Bull), [Angel.chater@beds.ac.uk](mailto:Angel.chater@beds.ac.uk) (A.M. Chater), [Lesley.lewis6@wales.nhs.uk](mailto:Lesley.lewis6@wales.nhs.uk) (L.J.M. Lewis), [g.shorter@qub.ac.uk](mailto:g.shorter@qub.ac.uk) (G.W. Shorter), [Eleanor.whittaker@northyorks.gov.uk](mailto:Eleanor.whittaker@northyorks.gov.uk) (E. Whittaker), [Jo.hart@manchester.ac.uk](mailto:Jo.hart@manchester.ac.uk) (J.K. Hart).

<https://doi.org/10.1016/j.actpsy.2022.103527>

Received 6 August 2021; Received in revised form 21 January 2022; Accepted 31 January 2022

Available online 7 February 2022

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evidence (Betsch, 2020; Chater et al., 2021; West et al., 2020).

Public health attempts to change behaviour have traditionally been through informing and educating (Michie et al., 2011). Behavioural science is an umbrella term that covers disciplines that deal with human actions, including psychology, sociology, epidemiology, biology, anthropology, economics, and political science (Public Health England, 2018). The degree of the application of behavioural science knowledge and skills in public health has been sub-optimal (McManus et al., 2018; Woolf et al., 2015). Common limitations in public health campaigns include the assumption that knowledge and information are the main drivers of behaviour, that people act rationally, and that changing behaviour is just 'common sense' (Kelly & Barker, 2016; Michie et al., 2011). There is a growing recognition that basing public health interventions on best-evidence behavioural science theories, including those from psychology, behavioural economics, sociology and anthropology (Bonell et al., 2020; McManus et al., 2018; Skivington et al., 2021) methods, and high quality, appropriately evaluated evidence, is likely to make them more effective (Glanz & Bishop, 2010). Common examples of public health initiatives informed by behavioural science include increasing the COVID 19 vaccine uptake (Van Bavel et al., 2020), tackling antimicrobial resistance by improving prescribing behaviours (Lorenzatto et al., 2018) and smoking cessation campaigns (Brown et al., 2014).

Behavioural science has several models such as the Capability, Opportunity, Motivation = Behaviour (COM-B) model (Michie et al., 2011), which explains Capability, Opportunity and Motivation are the three key components to any behaviour. Behavioural science also has numerous frameworks to support systematic and effective behaviour change intervention development, such as the Behaviour Change Wheel (Michie et al., 2011) and the Intervention Mapping Framework (Bartholomew et al., 1998). These tools are to help support the translation of behavioural science outside of the field of health psychology.

There have been attempts to support use of models and frameworks in public health practice (West et al., 2019) and to describe their application in the 'real world' (Fernandez et al., 2019). However, most public health interventions will never be reported in academic literature or be subject to robust evaluation (Denford et al., 2018). It is not clear, therefore, how behavioural science tools are used in practice and the barriers to aligning public health interventions with best evidence.

Previous research has identified a multitude of factors that inhibit the successful use of behavioural science in public health (Ellen et al., 2014; Woolf et al., 2015). These factors include structural processes which encourage the post-hoc justification of interventions selected instead of evidence-driven interventions; the fear that evidence might be overwhelming for practitioners (Curtis et al., 2018); beliefs that the use of behavioural science does not have major impact and the format of academic papers (Curtis et al., 2018; Wye et al., 2015) and confusion caused by the multitude of psychological theories (Weston et al., 2020).

There are various terms describing the processes whereby academic output is influenced by and influences policy and practice. Knowledge translation describes a unidirectional process whereby academic output generated via scientific research is shared and accessible to those working in policy and practice (Hommel et al., 2015). Knowledge mobilisation is broader term describing how useful research is produced and its movement into areas where it can have benefit is facilitated (Bayley et al., 2018). The focus on 'knowledge' in the names of these concepts is itself potentially misleading because knowledge is only one influence on practice, although it is clear that where people work in knowledge mobilisation, they are not restricted to just 'knowledge' (Research Impact Canada, 2018).

The COVID-19 pandemic has accelerated changes in health and care practices (Lewis et al., 2020). It is unclear whether this acceleration has also applied to the translation of behavioural science in public health. We aimed to explore the experiences of health psychologists and public health professionals using behavioural science to support public health during COVID-19, to understand the barriers and facilitators to its use,

and to determine whether the urgency for behavioural science translation was perceived to have had any impact or not.

## 2. Method

### 2.1. Design

This was a qualitative, semi-structured interview study conducted in April to June 2021. The methods and analysis are reported using the COREQ guidance (Tong et al., 2007). See supplementary file for checklist and page numbers.

### 2.2. Ethical approval and data storage

This study has received ethical approval from University of Manchester Proportionate University Research Ethics Committee. Transcripts were then anonymised and stored on a University of Manchester Dropbox for Business (encrypted).

### 2.3. Participants

Participants were behavioural scientists and public health professionals using behavioural science to support public health programmes during the COVID-19 pandemic. We included volunteers, professionals holding honorary posts, and local authority public health employees, such as public health practitioners and consultants. The public health team members included those with some responsibility for the UK public health response to COVID-19. There were no exclusion criteria. The authors were behavioural scientists (LBD, RRT, AC, LL, EB, GS, EW, JH) and medical students who had no prior knowledge of behavioural science in public health (SA, CA).

### 2.4. Procedure

We used a snowballing technique, starting with emails to authors' personal and professional networks and advertising on Twitter, and asking participants to pass on contact information to their colleagues. For this reason, it is not possible to estimate the number of individuals who did not participate. Participants were not known by the interviewers. Participants were informed that this project was a research project to fulfil the requirements of the undergraduate medical degree of CA and SA. CA and SA have had training in communication and interviewing as part of their undergraduate degree and were supervised by LBD who has a PhD and has published several papers using thematic analysis. Information sheets were included with all emails.

The interviews were conducted over online platform Zoom and, to be best of our knowledge, nobody else was present (it is not possible to verify this for the participants, as they were in their own environments). Informed consent was gained verbally prior to the interview starting and was audio-recorded. Interviews followed a semi-structured topic guide (see Fig. 1) and were approximately 45 min long. CA interviewed behavioural scientists and SA interviewed public health professionals. Interviews were audio-recorded and transcribed using otter.ai. Transcriptions were checked for accuracy by CA and SA, adjusted to intelligent verbatim transcriptions, and anonymised by redacting any information about people, places or organisations. Transcripts were then uploaded into NVIVO 12 Version 12.5.0.815. The consent audio clips were retained, and the rest deleted. Field notes were not used. Data saturation was determined by no repeats of data being expressed and no new themes being generated from the data (Saunders et al., 2018).

### 2.5. Analysis

Analysis was inductive and thematic to explore events, realities, meanings and experiences that have been formed due to the effects of a discussion about COVID-19 (Braun & Clarke, 2006). CA coded

<p><u>Public health professionals</u></p> <p>Tell me a bit about the work you have been doing as part of the public health response to COVID-19. Prompts – go deep into each explanation, asking further questions to get detail of what the roles have been, how long, who else they were working with.</p> <p>Tell me what behavioural science has informed your work during this time Prompts – if necessary, go back to all the different roles from question 1, ask specifically about behavioural science in each one.</p> <p>What methods have you used to access behavioural science for these roles? Prompts – again go back through any role outlined and prompt for each one. If mention people – ask who, how they accessed, what they did. If mention research / publications – ask what specifically, how they accessed.</p> <p>What was your experience of using behavioural science like? Prompts – what went well, what didn't go well? were there barriers to access / use? Were there things that helped with access / use?</p> <p>What do you think would be an ideal situation that would enable you to get the most out of behavioural science in situations like COVID-19? Prompts – What would you want to have access to and when or how?</p> <p>Has COVID-19 made you think differently about behavioural science in public health? Prompts – If so, how? What? Why? If not, why?</p> <p><u>Behavioural scientists</u></p> <p>Tell me a bit about the work you have been doing as part of the public health response to COVID-19. Prompts – go deep into each explanation, asking further questions to get detail of what the roles have been, how long, who else they were working with. What behavioural science theories, methods, evidence have you been using?</p> <p>What was your experience of using behavioural science like? Prompts – what went well, what didn't go well? were there barriers to using theories, methods, evidence?</p> <p>What do you think would be an ideal situation that would enable you to give the most that behavioural science has to offer in situations like COVID-19? Prompts – What do you want to be able to do, when or how?</p> <p>Has COVID-19 made you think differently about behavioural science in public health? Prompts – If so, how? What? Why? If not, why?</p>
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Fig. 1. Semi-structured interview topic guide with prompts.

interviews from behavioural scientists and SA coded interviews from public health professionals to find features within the data sets that were alike. CA and SA went on to gather codes to form potential themes, presented via a node structure in NVivo. RRT combined data sets, checked 100% of the data and reviewed themes in terms of their significance within the data, in relation to the particular theme. Themes were then further reviewed by LBD and JH at which point a third structure was developed by collapsing some themes. All co-authors reviewed the thematic map and clarified the evidence under each theme and subtheme. Findings were described semantically and so an attempt was made to speculate the broader meanings and implications of significant themes.

### 3. Results

#### 3.1. Characteristics of participants

Seventeen UK public health professionals using behavioural science ( $n = 7$ ) and behavioural scientists ( $n = 10$ ) took part in a semi-structured interview. Participants were based in England (11), Scotland (2), Wales (2), The Netherlands (1) and Canada (1). Behavioural scientists were all health psychology professionals (including HCPC registered Health Psychologists, academics and health psychology trainees). Further demographics are not reported because information about role and region

might identify individuals. Participants worked in numerous different roles in public health utilising behavioural science. These were developing communication strategies for public health campaigns, training local authority staff in behaviour science principles and supporting uptake of the COVID 19 vaccine in vulnerable groups.

*“So ensuring our COVID communication, everything that literally goes out, is backed by behavioural science, and it's all ... aligned with all principles and changing people's behaviour.”*

P8

*“A lot of my work has been around how we can upskill some of the volunteers working in local authority, public health, with the skills they need to undertake the COVID track and trace process ... So that can be anything from supporting behavioural science ... maximising the skills and communication skills that they have with members of the public, to how they can be look at the cultural awareness side of things.”*

P2

Although some of these roles already existed in public health, some views were expressed that individuals had to promote the important role of health psychologists and behavioural scientists and encourage others to include them as part of their team.

*“I had to go and say, I really think you need me on your team, we had to do a lot of self-promotion and stuff, to kind of get that opportunity. And that, I suppose is quite frustrating, because it means that there's quite a lot potential opportunities within public health, that for health psychologists that they could really add a lot of benefit to that are being completely missed.”*

P10

### 3.2. Thematic analysis findings

Three overarching themes were identified. These were: 1. Challenges and facilitators of translation of behavioural science into public health, 2. the unique context of translation and 3. Recommendations to support future behavioural science translation. From these main themes there were 10 sub themes (Table 1). Each of these are described below.

#### 3.2.1. Theme 1: Challenges and facilitators of translation of behavioural science into public health

There was a shared agreement across all participants about the urgent need for the use of behavioural science during the COVID-19 pandemic. Due to these time-pressures and novelty of the pandemic participants expressed worries about how to translate academic evidence into practical applications quickly. However, there were some factors that influenced the ability to support knowledge translation.

*“I think that's been one of the main challenges for our training in terms of how do they take the theory and the academic side and translate that for an audience that just needs answers quite quickly, so that we can implement some of the actions.”*

P16

**3.2.1.1. Methods and frameworks supported translation.** Behavioural science formal methodologies, theories and frameworks were commonly used by participants and identified as useful tools, which were viewed as practical and relatively easy to use. The ability to easily use these tools supported the translation of behavioural science into practice.

*“So pretty much everything we've done is based on the COM-B model [...] that's the only theory, I would say, that I use as my bible.”*

P1

*“We use the COM-B model and the behaviour change wheel. So we use the COM-B to talk about how we need to really define a behaviour, and how*

**Table 1**

Key themes and sub themes which described the experience of using behavioural science in Public Health settings during the COVID-19 pandemic from the 17 health psychologists or public health professionals.

Key themes	Sub themes
1. Challenges and facilitators of translation of behavioural science into public health	Methods and frameworks supported translation Lack of supportive infrastructure Conviction and sourcing of evidence Embracing behavioural science
2. The unique context of translation	Rapid change in context The multi-disciplinary team The emotional toll
3. Recommendations to support future behavioural science translation	Embedding experts into teams Importance of a collaborative network Showcasing the role of behavioural science

*we need to understand the influences on the behaviour and how that can then help shape what we do to increase adherence to it or to change it, whatever is needed to be done...I think what worked for me is that, it was such a novel situation, there wasn't going to be a huge evidence base around what works, what doesn't in a pandemic, you know, in terms of all the things we're trying to do, what behavioural science brought was that methodology, so we might not have ever been in this situation. It's been widely applied with other behaviours, and it's proved effective.”*

P11

Others were concerned about the translation of knowledge, with some aspects of behavioural science formal methodologies, theories and frameworks such as the use of behaviour change techniques (from the Behaviour Change Wheel) in different contexts being deemed as ‘technical’ concepts which may be difficult to communicate to others or train others to use effectively.

*“Depending on the training session, usually, we would go into mechanisms of action and behaviour change techniques. We've used the theory and techniques tool too, which links up behaviour change techniques to mechanisms of action. So, we've used that as our, you know, this is evidence which has been collated and links what BCTs are effective, then we see like you can use this as a guide to kind of illustrate what BCTs you might want to consider. But not necessarily saying that these are the right ones because they might not have been. It might not be relevant to your research area. I think that's the real limitation of it. So yeah, I think that's the hardest part. Then it's also utilising BCTs, as well, and actually being able to understand how to use them. I think they are still quite technical people who have never used them before or who aren't necessarily that familiar or have that much experience with, with working with behaviours.”*

P12

**3.2.1.2. Lack of supportive infrastructure.** Behavioural science was deemed to have a crucial role in the pandemic, with participants believing that there was a presence of existing skills to help support the pandemic. However, without the access to networks and no previous discussions about preparation for such an event, some participants felt the field of behavioural science was not prepared for the pandemic. Also, there was a belief that behavioural science not being considered as important by others, therefore, not consulted, at the start of the pandemic.

*“I know that a lot of medical experts have been saying for a long time this is going to happen, you have to prepare for it. Even though politics hasn't really been listening, at least, science has been talking about this. I don't think that has been happening in behavioural science so much. I recently read a review that I think looked at mentions of pandemics in behavioural science articles previous to COVID-19, and that was close to zero. So, it's not something that we as a science have been thinking about and have been preparing for at all.”*

P14

*“No, I think we weren't ready. I think we had the skills to possibly be ready. But I don't think we as a kind of field of study, were in the right places in the right rooms really early on with pre-existing relationships with that would have made it easier to take a behaviourally informed approach right from the start.”*

P17

**3.2.1.3. Conviction of and sourcing of evidence.** One of the main challenges with knowledge translation of behavioural science into practice

was the rate of acceleration guidance and literature was produced from multiple sources and published a few months into the pandemic. Some individuals felt this evidence on the application of behavioural science in pandemics was essential, others felt there was too much evidence to digest and use. Due to the large amount of evidence, participants felt it would be beneficial to have simple guidance of key principles, from a recognised and trusted national body to help with this issue and create consistency within the field.

*"I think one of the main challenges I've had with COVID is, is the absolute firehose of literature that it's generated, you know, and when you're working 50 hours a week, actually, during the response, it's next to impossible to keep on top of the evidence base."*

P6

*"It'd be good to have to help create that coherence, it'd be good to have access to a sort of the key principles document that everybody was worth signed up to, if you like. So it would be good to, you know, maybe a behavioural strategy that was co-produced with all everybody who needed to use it. So it reflected all the different levels that needed it."*

P5

However, well-recognised governing bodies such as the British Psychological Society were helpful resources in providing clear guidance of the application of behavioural science. Individuals would contact academics or leaders in the field for advice, if they had a pre-existing relationship. In contrast to identifying information from trusted sources, participants also stated how Twitter helped individuals to access useful evidence and information from key informants playing a role in the pandemic response e.g., members of Independent SAGE.

*"I think the BPS, and the documents that they've developed the resources that are so helpful. And, and because they're from like, a trusted source."*

P8

*"But the other source has been Twitter. So I follow some of the behavioural scientists, and some of the, you know, some of the members of the Independent Sage group and so on Twitter. So I've looked for links that they've been posting, and tried and looked at the sort of approach that they were, they were taking, and suggestions they were making through tweets, and links and things like that."*

P5

**3.2.1.4. Embracing behavioural science.** Participants said the urgent need for behavioural science during the COVID-19 pandemic had accelerated the field into the limelight, with people outside of the field wishing to utilise behavioural science in their work, upskill their teams, and understanding the benefit behavioural scientists could add.

*"I got into this world and realised, oh my goodness! How are we ever going to do anything without behavioural science."*

P3

*"I think COVID for us as health psychologists and behaviour scientists, it's actually done a massive favour in this sense that a lot of people are recognising behaviour change and behavioural science. So before COVID like my colleagues are really supportive around behaviour change, but you don't see many health psychologists working in public health. And whereas now, it's just, you know, everyone wants a behavioural scientist in their department to some extent. So I think COVID has definitely helped us in the behavioural science world."*

P8

### 3.2.2. Theme 2: The unique context of translation

Many challenges and facilitators of the translation of behavioural science were highlighted in theme one. This theme specifically considers the context of understanding translation of behavioural science into practice during COVID-19 and many of the unique characteristics which influenced translation during this period of time.

**3.2.2.1. Rapid change in context.** Due to the nature of the COVID-19 pandemic, there were ever-changing restrictions and guidance from the government. Participants discussed that they found this challenging. These challenges were mainly due to the uncertainty and frustration of future changes. These changes made it difficult to maintain scientific rigour, whilst re-designing or adapting new interventions. For some participants this was somewhat expected e.g., through the government roadmap, and for others it was unexpected change.

*"Of course, as we come out that while we go through the government roadmap, things keep changing and tweaking, so we were sort of giving those messages out last year about don't do this, don't do that. And then you have to keep updating at all says, it's trying to sort of keep it fresh."*

P17

*"So we'd get halfway through doing the work and the goalpost would shift, and then you have start all over again. So that that there, there were a number of challenges with an attention between operationalizing what needs to be done, as well as trying to do things with as much rigour as you can."*

P13

**3.2.2.2. The multi-disciplinary team.** Working as a multi-disciplinary team during the pandemic was suggested to be a strength of the work produced and mostly an enjoyable experience both inside their organisation and across organisations.

*"I think on the whole, it's been really positive. Because I think as well, the pandemic has really brought everybody together. And that's within public health and also across different organisations. So in our team or in our organisation, everybody is being redeployed everywhere else. So you're working with people who you probably wouldn't have had the opportunity to work with before"*

P12

Some individuals expressed the complexities and frustrations of working in multi-disciplinary teams when the behavioural science expertise was not used by colleagues. The application of behavioural science where it had not been used previously on occasion had raised conflict between teams.

*"So there's some politics, I think the communications team was also felt threatened. Because we were trying to ask them and inform them and suggest how we thought it'd be working should or could work from a behavioural science, which didn't fit with their experience view of the world. To say that I was frustrating would be an understatement."*

p9

The use of participatory approaches and co-design in intervention development was found to be beneficial in understanding barriers to behaviour change and developing acceptable interventions.

*"That's been a lot of engagement and co-production work with the more vulnerable communities in the county, and to identify really what the barriers are for them to uptake, the support that they need, and then working with communications to get the messages right, to ensure that they do come forward and that the messages resonate with them."*

P1 following the knowledge mobilisation and partnership approach.

3.2.2.3. *The emotional toll.* Burnout and exhaustion were a consequence of the urgent need for behavioural science during the COVID 19 pandemic amongst some of the participants. Burnout was attributed to time pressures, lack of understanding from colleagues about the complexity or work required and the ever-changing environment.

*“It’s exhausting, though behavioural science doesn’t thrive under those conditions of time.”*

P3

*“It is a very definite challenge because of the speed at which things were moving ... there were tears as I have already mentioned, of the speed at which you had to work. There were a lot of very long days, and many hours being worked.”*

P13

Whilst both of these accounts acknowledged the emotional toll as a function of time, there was also an emotional toll when participants perceived that their input had not been included or embedded.

*“To a certain extent, affected my wellbeing because, I was working a lot more hours than I should have been and I do think there’s a lack of understanding around what it takes and what it is, I think people think they know what it is. But actually, when it comes to a applying that in practice, it does take time and expertise ... so you kind of invest a lot of time either reviewing some notes or providing guidance, and then they would just decide to ignore it anyway.”*

P11

### 3.2.3. Theme 3: Recommendations to support future behavioural science translation

There was a common understanding of the need to continue to use behavioural science in the future of public health and supporting long-term pandemic recovery. Several recommendations and key learning points were made about the field of behavioural science and how knowledge brokering might work in the future.

3.2.3.1. *Embedding experts into teams.* Having a behavioural scientist or a team of behavioural scientists working in local authorities or public health organisations was viewed as essential by the participants. Having an expert in a team could ensure key principles are applied correctly and embedded within the service. Similarly having strong links with behavioural scientists outside the public health setting may also work.

*“I’m worried it’s being diluted a bit too much... and simplified because, you know, there is, there’s much more complexity.”*

P1

*“In an ideal situation, to have a team of behavioural scientists in every local authority, you’d have a team of behavioural scientists at the disposal of any organisation that we’re working with ... I know for a fact that there’s localities out there that are gathering, what I assume is good insights. But I would argue not scientifically sound, whereas if they have behavioural scientists embedded within their organisation, then presumably, that wouldn’t be an issue.”*

P15

Participant 13 cautioned against external teams providing occasional behavioural science consultancy and then detaching from the service. Whilst consultancy was valued, it was thought that this was not a sustainable way of working in the future and that integration should be

*“So something ... that it becomes business as usual, rather than somebody helicoptering in, here is a piece of research that we’ve done, we’ve done this for you, and then they come away again, that that is not sustainable.”*

P13

3.2.3.2. *Importance of a collaborative network.* In the UK, several networks of health psychologists and other behavioural scientists self-formed during the pandemic (Health Psychology Exchange (HPX), the HPX Public Health Forum, the British Psychological Society (BPS) COVID-19 Behavioural Science and Disease Prevention Taskforce) or existed prior to the pandemic (Division of Health Psychology, Behavioural Science and Public Health Network). These were seen as vital throughout the pandemic as they enabled peer support, access to specific expertise, dissemination of latest guidance and case examples of the application of behavioural science during COVID 19. Continuing this approach moving forwards was advocated.

*“I think it [HPX Public Health Forum] was almost a network for kind of health psychologists working within public health. So we could share what we’ve been doing, share practice, resources that we’d find, how things have gone down. So I mean, it’s still ongoing, and people are still participating in it. So I think that kind of shows that is, people do find it valuable.”*

P12

*“The Health Psychology Exchange, had a ... a single point of access into a variety of different experts in the field. So we were able to pose a question to say, does anybody has anybody done any sort of research in a particular area ... and Health Psychology Exchange was able to find somebody with the skills, the knowledge or maybe have done some research in that particular area, and put those put them in touch with us.”*

P2

3.2.3.3. *Showcasing the role of behavioural science.* Participants felt that the pandemic had shone a light on behavioural science in a positive way. However, they felt further work needed to be done to continue to emphasise the importance of the field such as showcasing successful case studies and to robustly collect data of the impact and benefit of health psychology and behavioural science in public health.

*“The next job is to take, assuming there are success stories, measurable outcomes that behavioural science can demonstrate, we’ve made a difference, because we’ve done this, this and this, and we can apply it to other health challenges, not necessarily pandemics, but just more general public health changes, then I think that’s what it could have been doing, and should be doing going forward. And I think just, it’s just got different levels of acceptance and understanding in different parts of the country, in different local authorities or perhaps in different parts of the healthcare system.”*

P9

*“I think that the research that has already been done already highlights the significance of health psychology, but that [research] ... needs to be further funded. And so that more research can be produced, because then it’s, it’s easier and more likely, institutions like NHS to adopt more health psychologists, if we’ve got evidence, we’ve got proof, we’ve got robust science that tells us that this can make a positive difference to people’s lives.”*

P10

#### 4. Discussion

This research aimed to understand the experience of using behavioural science in public health during COVID. The three themes: 1) Challenges and facilitators of translation of behavioural science into public health, 2) The unique context of translation, 3) Recommendations to support future behavioural science translation, inform us about barriers and facilitators to using behavioural science in public health, the impact of the COVID-19 context on translation and future recommendations.

The theme of ‘Challenges and facilitators of translation of behavioural science into public health’, highlighted the use of behavioural science methods and frameworks supported translation, but accessing credible information quickly was difficult. This theme aligns with the existing literature about the principals of knowledge mobilisation, with people, networks, multidisciplinary teams, and clear and simple methods and frameworks such as the Behaviour Change Wheel and COM-B (Michie et al., 2011) being important. This finding links strongly with sociological theories such as Actor-Network Theory, which explains how clusters of actors create meaningful networks (Law, 1992). There was a sense of being unprepared for the novel situation that the pandemic posed, and a feeling of being overwhelmed with information from multiple sources, ranging from social media to scientific literature. Participants reported making recommendations early in the pandemic to use frameworks, and to ensure clarity of information, that comes from a credible source, to reduce the feeling of being overwhelmed (Chater et al., 2020). While those interviewed demonstrated experience in, and the value of, using behavioural science frameworks, they recognised that professionals might require more support to implement behavioural science in practice. It was interesting that a recently published (2019) guide to behaviour change for local authorities (West et al., 2019) was not specifically mentioned by participants working in England. It would perhaps be useful to conduct some research with public health practitioners to understand how guides, such as this, could be adopted.

Theme two, provides an understanding of how the ever-changing context of COVID-19 impacted translation. The Government were making recommendations and policy changes to ‘control’ the spread of the virus, those working ‘on the ground’ in public health settings were experiencing a quickly changing environment, with rapid production of evidence of varying quality and rapid change in national policies. This took an emotional toll, which has been seen elsewhere during the pandemic (Greenberg, 2020; Jalili et al., 2021). ‘Burnout’ amongst healthcare workers is thought to persist for years after the initial outbreak (Jang et al., 2021). Interventions such as psychological support are required to support mental and physical health of these individuals and public health practitioners are of no exception.

This theme highlighted how the pandemic had encouraged multi-disciplinary working and participatory approaches. This was seen as a benefit, however, sometimes participants found it challenging due to a lack of understanding from others of behavioural science or their roles. This is not unique to this context and has been identified in other areas of inter-disciplinary working (Axelsson & Axelsson, 2006; Karam et al., 2018). Often key principles of multi-disciplinary working include trust, mutual respect and communication are required to support success (Karam et al., 2018). Simply putting individuals in a team, does not equate to efficient working (Barrow et al., 2015). Further work should explore the challenges of multi-disciplinary working in behavioural science and establish ways of which challenges can be overcome and networks can support teams. In addition, it is possible that a changing and uncertain context can itself influence the building of networks, as to the need for access to rapid expertise might necessitate direct relationships, as opposed to reliance on a slower, less direct system of access to evidence. Future research could explore specifically the differences between network development and maintenance during rapidly changing and relatively stable situations.

Recommendations about the role of individuals in knowledge

mobilisation included more training for public health teams but also more access to specialist behavioural scientists. Methods to support rapid consensus of expertise and ways to translate to practice are needed so that the evidence can be rapidly and usefully mobilised (Chater et al., 2021). Planning for effective partnerships and having access to supportive network from the outset could reduce burnout and facilitate workload support and planning. Although the majority of interviews were conducted in England, Scotland, and Wales, the partnership approaches and relevant support networks are important to knowledge mobilisation internationally, particularly if behaviour change is tailored to cultural orientations and sensitive to the needs of the target populations (Yan et al., 2020).

Integrating behaviour change approaches into public health qualifications could prove valuable in the subsequent knowledge mobilisation of behavioural science (McBride et al., 2021). In developing training, we should adhere to the principles of behavioural science, ensuring that knowledge and skill development goes alongside other aspects capability, opportunity, and motivation so that public health practice changes.

To conclude, we found support for the importance of people and for simple frameworks. We recommend making plans about how those people and frameworks can be mainstreamed in public health. This will likely be a combination of defining and implementing the competencies in behavioural science required by those working in public health roles, as well as nurturing networks to facilitate knowledge mobilisation in preparation for future public health emergencies. Future research could explore how different frameworks are received and used.

#### Declaration of competing interest

LBD, JH and AC are all chairs or past chairs of Division of Health Psychology, British Psychological Society.

AC is founder member of Behavioural Science in Public Health Network.

LBD, JH and AC are founder members of the Health Psychology Exchange.

AC, LBD, JH, GS, LL, EW are members of the British Psychological Society Taskforce on Behavioural Science and Disease Prevention.

AC, LBD and JH work as private consultants to public health organisations.

LL and EW are behavioural scientists employed by public health organisations.

#### Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.actpsy.2022.103527>.

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